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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
LEUNG, CHRISTINA Y	

ART UNIT	PAPER NUMBER
2613	

DATE MAILED: 10/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/614,112	ARONSON ET AL.	
	Examiner	Art Unit	
	Christina Y. Leung	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-8 and 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuchiya et al. (US 5,040,242 A) in view of Johansson (US 4,675,770 A).

Regarding claim 1, Tsuchiya et al. disclose an optical transceiver module (Figures 1 and 3), comprising a plurality of components, the components including:

an optical transmitter (light emitting element 5);

an optical receiver (light receiving element 7); and

a power controller circuit (power supply circuit 41) electrically coupled to at least one of the plurality of components, where the power controller circuit is configured to perform power supply functions for the optical transceiver module and the power controller circuit includes multiple voltage regulators 12 and 13 providing power to the components at two or more voltages (Figure 3 shows one embodiment of power supply circuit 41 in detail; column 7, lines 30-63).

Examiner respectfully notes that although element 13 is labeled "DC-DC converter" by Tsuchiya et al., this element provides regulated voltage output (V2) and is therefore a voltage regulator. Tsuchiya et al. also disclose that element 12, which is more explicitly labeled "voltage regulator 12" may be implemented with a DC-DC converter (column 10, lines 10-13).

Further regarding claim 1, Tsuchiya et al. do not explicitly disclose that the components are contained within a housing, but it is well understood in the electronic and communications arts that optical and electrical elements may be encased in some type of housing. It would have been obvious to a person of ordinary skill in the art to specifically include a housing in the system disclosed by Tsuchiya et al. simply in order to allow the module to be easily handled and protect the disclosed components from damage.

Further regarding claim 1, Tsuchiya et al. do not explicitly disclose that the power control circuit 41 is an integrated circuit, but it is also well understood in the electronics art that circuit elements may be integrated together. Johansson, for example, teaches a power controller comprising multiple voltage regulators in a single integrated circuit (see Figure and Abstract). It would have been obvious to a person of ordinary skill in the art to integrate the power controller circuit elements as taught by Johansson in the system disclosed by Tsuchiya et al. in order to manufacture the circuitry more compactly and efficiently.

Regarding claims 2 and 3, Tsuchiya et al. in view of Johansson do not specifically disclose a low drop-out voltage regulator or a boost or buck regulator, but various types of voltage regulators are generally well known in the art. It would have been obvious to a person of ordinary skill in the art to use either a low drop-out voltage regulator or a boost or buck regulator as the voltage regulator in the system described by Tsuchiya et al. in view of Johansson as an engineering design choice of a type of well known and widely available type of element to provide the disclosed voltage regulation function.

Regarding claims 4 and 5, Tsuchiya et al. disclose that the power controller circuit further includes a serial bus within the power controller circuit and that the multiple voltage regulators

are electrically coupled to the serial bus (for example, Figure 3 shows a bus connecting regulators 12 and 13).

Regarding claim 6, Tsuchiya et al. also disclose that the power controller circuit further comprises a serial interface electrically coupled to the serial bus (Figure 3 shows the bus connected to S1 output from processor 20).

Regarding claim 7, Tsuchiya et al. disclose that the components further comprise a main controller (processor 20) electrically coupled to the serial interface, such that in use the main controller can control at least one of the multiple voltage regulators.

Regarding claim 8, Tsuchiya et al. do not specifically disclose individually addressable voltage regulators, but Johansson further teaches voltage regulators that are individually addressable (column 1, lines 54-56). It would have been obvious to a person of ordinary skill in the art to use individually addressable voltage regulators as taught by Johansson in the system described by Tsuchiya et al. in view of Johansson in order to allow the system to operate the multiple voltage regulators independently and thereby more effectively control the voltages output by the power controller.

Regarding claim 10, Tsuchiya et al. disclose that at least one of the voltage regulators is adjustable. Specifically, they disclose that threshold values may be adjusted in the regulator (column 8, lines 17-47). The voltage regulators taught by Johansson are also adjustable (Abstract).

Regarding claim 11, Tsuchiya et al. do not specifically disclose a temperature sensor as recited, but Johansson further teaches that the power controller includes temperature sensor 12 (column 2, lines 28-31). It would have been obvious to a person of ordinary skill in the art to

include a temperature sensor as taught by Johansson in the system described by Tsuchiya et al. in view of Johansson in order to better protect the voltage regulators circuits from failures caused by excessive heat (Johansson, column 1, lines 27-51).

Regarding claim 12, Tsuchiya et al. disclose that the components further include a driver 4 electrically coupled to the optical transmitter 5 and a post-amplifier 6 electrically coupled to the optical receiver. They do not specifically disclose that the driver is a laser driver for a laser, but various types of light emitting elements are well known in the art, including lasers. It would have been obvious to a person of ordinary skill in the art to specifically use a laser in the system described by Tsuchiya et al. in view of Johansson as an engineering design choice of a way to implement the light emitting element already disclosed by Tsuchiya et al. using a well known and widely available component.

Regarding claims 13 and 14, Tsuchiya et al. disclose that the components further include a main controller 20 electrically coupled to at least one of the components, wherein the power controller 41 is electrically coupled to and controlled by the main controller 20 (Figure 1).

Regarding claims 12-14, Tsuchiya et al. do not specifically disclose that the driver circuit, the post-amplifier circuit, or main controller are integrated circuits, but again, it is also well understood in the electronics art that circuit elements may be integrated together (as specifically taught by Johansson with respect to the power controller as already discussed above). It would have been obvious to a person of ordinary skill in the art to separately integrate the driver circuit elements, the amplifier circuit elements, and the main controller elements in the system described by Tsuchiya et al. in view of Johansson in order to manufacture the three circuitry groups more compactly and efficiently..

3. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuchiya et all. in view of Johannson as applied to claim 1 above, and further in view of Lemon et al. (US 5,953,690 A).

Regarding claim 9, Tsuchiya et al. in view of Johansson describe a system as discussed above with regard to claim 1. Tsuchiya et al. also disclose a light-receiving element 7 comprising a photodiode (column 11, line 18) and that at least one of the voltage regulators supplies voltage to receiver circuitry (Figure 1) but they do not specifically disclose an avalanche photodiode (APD) voltage supply.

However, various types of photodiodes are well known in the optical communications art. Lemon et al. in particular teach a system related to the one described by Tsuchiya et al. in view of Johansson including an optical communications receiver (Figures 1, 2A, and 2B) and further teach an avalanche photodiode 501 having a controlled voltage supply (including APD voltage generator 524 and corresponding regulator 528).

It would have been obvious to a person of ordinary skill in the art to specifically use an avalanche photodiode as taught by Lemon et al. in the system described by Tsuchiya et al. in view of Johansson as an engineering design choice of a way to implement the light receiving element already disclosed by Tsuchiya et al. using a well known and widely available component.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Y. Leung whose telephone number is 571-272-3023. The examiner can normally be reached on Monday to Friday, 6:30 to 3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571-272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CHRISTINA LEUNG
PRIMARY EXAMINER